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ABSTRACT

The needs-press model, as operationalized by the Stern Activities Index (AI) and the Organizational Climate Index (OCI), was examined for its usefulness in evaluating and measuring organizational climate in a school setting. According to the model, needs represents personality and press represents the environment. This research was designed to replicate a previous study by Steinhoff (1965) which isolated six first-order factors and two higher-order factors on the OCI. Twelve first-order factors and four second-order factors were also available for the AI. The respondents included 331 public school teachers and administrators from an urban school system; 171 were administered the AI and 160 were administered the OCI. AI reliability was .62 to .91, and OCI reliability was .61 to .89. Results of the various one-way analyses of variance indicated that the AI discriminated between groups; the OCI did not. Factor analysis performed on the OCI data and the combined AI and OCI data did not confirm the factors reported in Steinhoff's study. Refinement of the OCI was suggested along with further research involving interaction of the needs and press components. (Author/GDC)

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# THE OPERATIONALIZATION OF THE NEEDS-PRESS MODEL: A CRITIQUE

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# THE OPERATIONALIZATION OF THE NEEDS-PRESS MODEL: A CRITIQUE

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## Conclusions

This study was concerned with the operationalization of the needs-press model, specifically when using the Activities Index (AI) and the Organizational Climate Index (OCI) for measuring organizational climate in a school setting. It is the conclusion of this researcher that the two instruments as presently marketed are not beneficial in assessing organizational climate as defined by the needs-press theory.

The instruments measured the two components of the theory, needs and press, separately. There was no method for determining the interaction of the AI and the OCI. This interaction is vital to the needs-press model, without it there is no outcomes or culture component.

The research revealed the possibility of inaccurate factoring of the original form of the OCI. The short form of the OCI was based on this factoring, therefore the OCI short form may not be measuring adequately environment in school organizations.

There was an attempt in the original work to factor the AI and OCI results to create the culture dimensions. The factoring procedures used in this attempt appeared inaccurate also.

The general usage of both the AI and the OCI for research was a complicated procedure. The short forms seemed unnecessarily lengthy, consisting of 91 and 80 items respectfully. Computation of scores was difficult when machine scoring was not purchased. The technical manuals (Richman and Stern, 1975) gave little guidance in interpretation of the mean scores.

This study confirms the conclusions of Anderson (1982) and Mailler (1986). Research should be directed toward improving existing models of school climate and applied to developing a theoretical base.

## Background

Organizational climate has been defined as the atmosphere, tone, quality of life of an organization. Halpin (1966) referred to climate as the personality of the organization. Other terms which often are used interchangeably with organizational climate are environment and culture. Culture, however, usually denotes more of the ideology, beliefs, and values of a particular organization as opposed to the atmosphere or climate.

The following common properties were found to exist in a review of school climate research:

> (a) Schools do possess something called climate, unique to each organization . . . (b) such differences, while discernable, are elusive, complex, and difficult to describe and measure . . . (c) climate is influenced by, but not a proxy for, particular dimensions of the school such as student body characteristics . . . (d) climate affects many student outcomes, including cognitive and affective behavior . . . (Anderson, 1982, p. 370-371).

The literature recognizes organizational climate as a component of effective schools. Edmonds (1978) identified an orderly, safe climate conducive to teaching and learning as one of the correlates of an effective school. Most all listings of effective school characteristics include a positive and pleasant school/classroom climate or environment.

However, linking school outcomes to organizational climate has not always been succesful. Anderson (1982) agreed with researchers Brookover et al. (1979) and Wilson (1980) who argued failure of early studies to find significant school effects was the result of poor models, inadequate measures, and too few or wrong variables.

The importance of organizational climate having been established, the need for measuring and assessing climate becomes a necessity. Although locally developed instruments can be useful for specific local information, the results cannot be compared to regional or national norms (Norton, 1984). Another problem associated with climate assessment is the lack of a theory base for most instruments. Mailler (1986) substantiated this.

One set of instruments purports to operationalize a theory, the needs-press theory of organizational climate. These instruments are often referred to as the Syracuse Indexes. This research attempted to validate one of the Indexes, the OCI, and study the interaction of the AI and the OCI.

## Theory

The needs-press theory was conceived by Murray (1938) who built on Lewin's (1935) dictum, B = f(PE) or behavior is the function of personality times environment. In Murray's work, the term "needs" represented personality and the term "press" represented environment.

Stern was credited with operationalizing the needs-press model (Stern, 1970). The first instrument to be developed in the early 1950's was the AI, which measured 30 scale variables representing needs or personality. These 30 scales were then posited in parallel terms to represent press or environment. Utilizing the same format, several indexes were developed to measure press. The OCI was developed in 1963 to be the more general form of the press indexes.

The original forms of all the indexes consisted of 300 items with each scale being measured by ten items. Using factor analysis, 12 first-order and four second-order factors were isolated for the AI. A short form of this instrument was developed with 91 items which measures the 12 first-order factors and four second-order factors labeled areas.

Much of the early work on the development of the various instruments was completed by associates of Stern. One particular study by Steinhoff (1965) researched the OCI. Six first-order factors and two higher-order factors were isolated on the OCI. From this factoring, a short form was developed with 80 items which measured the six first-order factors and two second-order factors labeled areas.

The Steinhoff study also correlated the AI and the OCI factors through factor analysis. This was done in an attempt to create culture dimensions which were to represent the outcomes or behavior component of the needs-press model.

Problem

To evaluate all of the needs-press instruments would be a mammoth task. Therefore the focus of this research was on the OCI and its interaction with the AI. Was the implementation of the needs-press model by use of the AI and OCI consistent with the theory and were these instruments useful in describing climate in a school organization?

Specific objectives guided the study:

1. Replicate a previous study by Steinhoff (1965) which isolated first- and second-order factors on the OCI and combined AI and OCI data to isolate culture dimensions.

2. Evaluate the results to determine if they confirmed Steinhoff's findings with respect to climate and culture factors.

3. Evaluate the results to determine if they were useful in describing climate and culture in a particular school system.

4. Evaluate the utility of both the AI and the OCI.

5. Suggest future direction of the needs-press studies.

This study was limited, as was the study by Steinhoff, to one urban school system. The study was also limited, as was the Steinhoff study, to only two major groups within the school system, teachers and administrators. Pupils, support personnel, and other groups were not included in the collection of data.

## Method

The population of this study, conducted in 1985, was an urban school district in central United States. The sample was 20% of the administrative and teaching staff of the school district. Total number of respondents was 331, with 171 responding to the AI, and 160 responding to the OCI. Stern (1970) had stated that it was not necessary to administer both the needs and press instruments to the same group as long as they were drawn from the same population.

Support for the N of 300 was derived from Gorsuch (1983). "A present suggested absolute minimum ratio (for factor analysis) is five individuals to every variable, but not less than 100 individuals for any analysis (p. 332)."

Descriptive statistics were secured for both the AI and OCI responses as well as the reported demographic data. Scores were computed for the 12 AI factors, the four AI areas, the six OCI factors, and the two OCI areas. These computations were based on procedures described in the technical manuals. Reliability coefficients using the KR-20 formula were computed. A one-way analysis of variance was calculated for each factor and area score on both the AI and the OCI by gender, level, highest degree attained, number of years of experience in education, and age.

Responses to the OCI were factor analyzed to compare with the findings of Steinhoff. Two tests on the correlation matrix were computed: Bartlett's chi square for significance of residual variance and Cattell's scree test for determining the number of factors to extract.

Utilizing the User Oriented Factor Analytic Package, version 3.6 (Burdsal, 1981), an iterative principal axis solution was applied to the correlation matrix stipulating the number of factors to be extracted. From an orthogonal position by varimax, a promax oblique rotation was followed by a maxplane oblique rotation. To produce second-order factors, the factor correlation matrix derived from the previous solution, was factor analyzed in the same manner. To extract third-order factors, the factor correlation matrix was factor analyzed from a varimax orthogonal position followed by a promax oblique rotation.

The final statistical analyses involved an attempt to extract culture factors similar to those identified by Steinhoff (1965). In the Steinhoff study, the AI and OCI responses were combined by calculating the mean responses by school building for each of the 18 factors (12 AI and six OCI). These means were then factor analyzed to extract the culture factors. This method seemed inappropriate as the research was concerned with the organizational unit as a whole. An additional limitation was that each individual responded to only one of the two instruments.

The combining of the data in this research was accomplished by matching the AI and the OCI responses. The matching involved combining an AI response data sheet with an OCI response data sheet

based on the demographic characteristics which had shown the most variance in the different one-way analyses of variance. These were level of teaching, gender, and highest degree earned. The response data were also matched by type (teacher or administrator). The result was 109 records representing combined AI and OCI data.

The scores representing the 12 AI factors and the six OCI factors were computed and combined creating 18 variables. These variables were correlated and factor analyzed utilizing the SPSSx program. A scree plot was requested and the iterative principal axis solution was applied with a varimax orthogonal and direct oblimin oblique rotation.

Findings

Results of the scoring of the AI indicated the staff of this particular school district as a unit may be indifferent to personal achievement, have a high level of dependent, submissive, socially controlled behavior, and have need for academic non-conformity. Results of the scoring of the OCI indicated this unit did not vary from reported norms. Thus the staff may have perceived the organizational environment as neither supportive nor non-supportive of intellectual activity, and one that is neither overly work oriented nor people oriented.

Reliability coefficients were similar to those reported in the technical manuals. Coefficients on the AI ranged from .62 to .91; coefficients on the OCI ranged from .61 to .89.

Results from the different one-way analyses of variance performed on the AI indicated a statistically significant difference in needs at a .05 level of confidence for certain groups.

Area I (Achievement Orientation): Level; Gender; Highest degree earned.
Area II (Dependency Needs): Age
Area III (Emotional Expression): Gender; Highest degree earned; Number years experience in education; age.
Area IV (Educability): Level; Highest degree earned.

Results of the different one-way analyses of variance performed on the OCI indicated a statistically significant difference in perception of the organizational environment at .05 level of confidence in only one of the areas.

Area I (Control): Highest degree earned.
Area II (Task Effectiveness): None.

Factor analyses performed on the OCI isolated 13 first-order factors. The factors were named after listing the items which loaded .350 or greater. Determination of the salient loadings was based on the sample size of 160 (Gorsuch, 1983).

Three second-order factors were extracted from the factor correlation matrix. Those items which loaded at .340 or greater were considered salient and used to name the dimensions labled as areas in keeping

with the literature. One third-order factor was extracted.

The AI and OCI response data were combined and factor analyzed. Three factors were isolated. Because of the sample size of 109, those items with loadings of .400 or greater were considered to be salient. Two of these dimensions, labeled cultures in keeping with the literature, had loadings only from the AI. The third dimension had salient loadings which represented the entire six factors from the OCI.

## Discussion of Findings

The various one-way analyses of variance were computed for the purpose of determining if the two instruments, the AI and the OCI, discriminated between groups as expected. There were statistically significant differences for various groups on all of the AI areas. Results of the OCI analyses of variance did not reveal these differences. Therefore, in this particular study, the AI **did** discriminate as expected while the OCI **did not** discriminate between groups as expected.

This study **did not** confirm the findings of Steinhoff (1965) in regard to number of first-order and higher-order factors extracted from the OCI response data. Steinhoff reported six first-order and two second-order factors from the long form of the OCI which measured 30 press scale variables. This in itself seemed unusual when considering that the AI had 12 first-order and four second-order factors, and the OCI scale varialbles were parallel to the AI scale variables.

The response data from the present study utilizing the short form of the OCI, **did not** factor even reasonably close to the six first-order factors. There were 13 first-order, three second-order, and one third-order factors extracted. These particular dimensions were similar in number and meaning to the AI factors. This was not true of the Steinhoff factoring. See Table I.

The present study **did not** confirm the findings of Steinhoff in regard to the factor analysis of combined AI and OCI data. Steinhoff reported isolation of five factors but discarded two of these as one contained loadings only from the AI and one contained loadings only from the OCI. The remaining three factors, labeled as culture dimensions, were reported to have joint loadings from the AI and the OCI.

Following the Steinhoff study, Hamaty (1966) attempted to relate the three identified culture dimensions to behavior in a school organization. He found the effect was limited.

> After examining the three cultures, it became apparant that high intercorrelations existed among them. This finding may account for many similarities found to be prevalent among the cultures and at the same time raises questions concerning the previous research done by Steinhoff with respect to the independence of the culture types (p. 102).

TABLE I

EXTRACTED FACTORS

| AI | OCI 1965 Study | OCI 1985 Study |
|---|---|---|
| First-order | First-order | First-Order |
| 1. Self-Assertion | 1. Achievement Standards | 1. Administrative Effectiveness |
| 2. Audacity-Timidity | 2. Intellectual Climate | 2. Personal Dignity |
| 3. Intellectual Interests | 3. Practicalness | 3. Intellectual Climate |
| 4. Motivation | 4. Supportiveness | 4. Play |
| 5. Applied Interests | 5. Orderliness | 5. Self Expression |
| 6. Orlerliness | 6. Impulse Control | 6. Group Membership |
| 7. Submissiveness | | 7. Activity Support |
| 8. Closeness | | 8. Organizational Effectiveness |
| 9. Sensuousness | | 9. Supportiveness |
| 10. Friendliness | | 10. Organizational Commitment |
| 11. Expressiveness-Constraint | | 11. Social Form |
| 12. Egoism-Diffidence | | 12. Group Support |
| | | 13. Social Activities |
| Higher-order | Higher-order | Higher-order |
| I. Achievement Orientation | I. Development | I. Organizational Climate |
| II. Dependency Needs | II. Task Effectiveness | II. Personal and Group Expression |
| III. Emotional Expression | | III. Development |
| IV. Educability | | |

The present study extracted three factors from the combined AI and OCI response data. Two of these factors contained loadings only from the AI. The remaining factor represented the entirety of the OCI first-order factors. **Therefore, it was concluded that there was no interaction of the needs and press variables.**

There are several possible explanations for the discrepancy in number of factors isolated in the present study and the Steinhoff study. The original factoring on the OCI was completed in 1965. Techniques in factor analysis have improved over the 20 year span between studies. The process is more sophisticated and more easily completed with computer packages now available.

A major error in the work by Steinhoff was the reporting of higher-order factoring from an orthogonal position without going oblique. This type of error is discussed by Gorsuch (1983).

> The author has seen factor-analytic studies that reported a higher-order analysis from the orthogonal, varimax factors. The investigators seem to have done the impossible by extracting factors from an identity matrix (p. 370).

An oblique solution from an orthogonal position provides a more accurate solution and is necessary when proceeding to higher-order factoring. This could have accounted for the high intercorrelations among the dimensions found by Hamaty (1966).

Other procedures utilized in the 1965 study also share in criticisms of factor analytic practices reiterated by Gorsuch (1983). Some of these are: assuming that the factors from one particular research are the factors; giving insufficient attention to the selection of variables; failing to report what was actually done in sufficient detail so that the analysis can be approximated in another study; not using the statistics as part of an on going research program to better clarify and interpret results.

The researcher in the present study does not proclaim to have discovered the 'correct' domains in the factor analytic procedures. The researcher does proclaim that results of the 1965 study were not substantiated.

NOTE: This research was conducted while fulfilling requirements for the Doctor of Education Degree, Oklahoma State University. The full study is available from the dissertation archives.

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